

WHAT IS CLAIMED IS:

1 1. A system for controlling a volume output by a set of headphones to prevent
2 harmful sound levels from damaging a user's hearing, the system comprising:
3 a volume sensor/controller for determining sound levels from an audio source and
4 comparing the predetermined sound levels to a volume threshold; and
5 a warning indicator for indicating that the determined sound level is outside the volume
6 threshold.

1 2. A system for controlling volume output as described in Claim 1, wherein the
2 determined sound levels are represented as energy functions according to their respective
3 frequencies.

1 3. A system as described in Claim 1, wherein the volume sensor/controller
2 comprises:
3 a volume calibrator for setting the volume threshold;
4 a volume/frequency measurement sensor for representing the determined sound levels as
5 energy functions; and
6 a comparator for comparing the determined sound levels with the volume threshold and
7 notifying the warning indicator that the volume threshold has been exceeded.

1 4. A system as described in Claim 1, wherein the warning indicator is fixed to the
2 headphones for indicating when the volume threshold has been exceeded.

1 5. A system as described in Claim 4, wherein the warning indicator comprises a
2 plurality of LED's.

1 6. A system as described in Claim 4, wherein the warning indicator comprises an
2 LCD.

1 7. A system as described in Claim 4, wherein the warning indicator comprises an
2 audio indicator.

1 8. A volume sensor/controller as described in Claim 3, wherein the volume
2 calibrator comprises:
3 a category selector allowing the user to select between different volume controlling
4 settings matching different user characteristics; and
5 a category data base for storing the sound characteristics for the volume controlling
6 settings.

1 9. A volume calibrator as described in Claim 8, wherein the category data base
2 comprises:
3 a default user setting;
4 an age dependent setting;
5 a listener type setting; and
6 a manually controlled setting.

1 10. A category data base as described in Claim 9, wherein the listener type setting is
2 configured for setting the volume for a user having a form of hearing loss.

1 11. A system for controlling a volume output by a set of headphones to prevent
2 harmful sound levels from damaging a user's hearing, the system comprising a volume
3 sensor/controller for:
4 determining sound levels from an audio source;
5 comparing the determined sound levels to a volume threshold; and

1 adjusting the volume output of the headphones to a level below the volume threshold if
2 said determined sound level is above the volume threshold.

1 12. A system for controlling volume output as described in Claim 11, wherein the
2 determined sound levels are represented as energy functions according to their respective
3 frequencies.

1 13. A system as described in Claim 11, wherein the volume sensor/controller
2 comprises:
3 a volume calibrator for setting the volume threshold and a volume control mode;
4 a volume/frequency measurement sensor for representing the determined sound levels as
5 energy functions;
6 a comparator for comparing the determined sound levels with the volume threshold; and
7 an active volume controller for controlling the output volume by adjusting the output
8 volume accordingly in an automatic volume control mode.

1 14. A volume sensor/controller as described in Claim 13, wherein the volume
2 calibrator comprises:
3 a volume control mode selector allowing the user to select between an automatic or
4 manual volume control mode;
5 a category selector allowing the user to select between different volume controlling
6 settings matching different user characteristics; and
8 a category data base for storing the sound characteristics for the volume controlling
9 settings.

1 15. A volume calibrator as described in Claim 14, wherein the category data base
2 comprises:
3 a default user setting;

1 an age dependent setting;
 2 a listener type setting; and
 3 a manually controlled setting.

1 16. A category data base as described in Claim 15, wherein the listener type setting is
 2 configured for setting the volume for a user having a form of hearing loss.

1 17. A volume sensor/controller as described in Claim 13, wherein the active volume
 2 controller comprises:
 3 a volume adjuster for adjusting the volume according to the compared energy value; and
 4 a notifier for notifying the warning system that an adjustment was necessary.

1 18. A system for controlling a volume output to prevent harmful sound levels from
 2 damaging a user's hearing, the system comprising:
 3 a set of headphones;
 4 a volume sensor/controller for determining a sound level corresponding to an audio
 5 source and comparing the sound level to a volume threshold; and
 6 a warning indicator remote from the headphones, in communication with the volume
 7 sensor/controller, for indicating that the determined sound level is above the volume threshold.

1 19. A warning system as described in Claim 18, wherein the warning indicator is
 2 provided by a PC.

1 20. A warning system as described in Claim 19, wherein the PC includes a database
 2 for storing a user's listening history.

1 21. A warning system as described in Claim 18, wherein the warning indicator is
 2 provided on a remote hand held device.

1 22. A system as described in Claim 18, further comprising wireless connection
2 hardware for wirelessly connecting the headphones and the audio source.

1 23. A method for controlling a volume output of a set of headphones to prevent
2 harmful sound levels from damaging a user hearing, the method comprising:
3 setting a volume threshold;
4 receiving audio signals from an audio source;
5 comparing the audio signals to the volume threshold; and
6 adjusting a volume output of the compared audio signal to be within the volume
7 threshold.

1 24. A method as described in Claim 23, further comprising sending a warning signal
2 to a warning indicator when the audio signals are determined to be above the volume threshold.

1 25. A method of sending a warning signal as described in Claim 24, wherein the
2 warning signal is sent via a network.

1 26. A method as described in Claim 24, further comprising storing each occurrence of
2 sending the warning signal in a database.